Simpson

INSTRUMENTS THAT STAY ACCURATE

OPERATOR'S MANUAL

SIMPSON 890 SOUND LEVEL CALIBRATOR

WARNING

For safe usage, it is essential that the operator read this manual carefully before using the instrument for any measurements.

SIMPSON ELECTRIC COMPANY
853 Dundee Ave., Elgin, Illinois 60120
Area Code 312, Telephone 697-2260
In Canada, Bach-Simpson, Ltd., London, Ontario

Warranty

SIMPSON ELECTRIC COMPANY warrants each instrument and other articles of equipment manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any instrument or other article of equipment which shall within 90 days after delivery of such instrument or other article of equipment to the original purchaser be returned intact to it, or to one of its authorized service stations, with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and SIMPSON ELECTRIC COMPANY neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sale of its products.

This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside the SIMPSON ELECTRIC COMPANY factory or authorized service stations, nor which has been subject to misuse, negligence or accident, incorrect wiring by others, or installation or use not in accord with instructions furnished by the manufacturer.

Simpson
INSTRUMENTS THAT STAY ACCURATE

ELECTRIC COMPANY
853 Dundee Ave., Elgin, Illinois 60120 Phone: (312) 697-2260
IN CANADA: Bach-Simpson, Ltd., London, Ontario
IN ENGLAND: Back-Simpson (U.K.) Limited, Wadebridge, Cornwall
IN INDIA: Ruttonsha-Simpson Private, Ltd., International House
Bombay-Agra Road, Vikhroli, Bombay

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NOTE: This Operator's Manual contains information essential to the operation of this Instrument. Therefore, it should be kept in a convenient place and used for reference as required.

Figure 1-1. 890 Sound Level Calibrator

SECTION I

INTRODUCTION

WARNING

Never place the operating calibrator tightly against the ear. The high sound level present could be harmful, especially to someone with a hearing deficiency.

1.1 GENERAL

1.1.1 The Simpson 890 Sound Level Calibrator (hereafter referred to as the 890, or simply the Instrument) is an accurate, portable, sound source designed specifically for convenient field calibration of the Simpson 884 and 886 Sound Level Meters and other compatible microphone-instrument systems. Compact, rugged construction and battery powered operation permit use in virtually any location.

1.1.2 When acoustically coupled to an 884 or 886 Sound Level Meter, the 890 provides a constant, calibrated sound pressure level of 114 dB (0 dB reference is 20 μNewtons per square meter) at the microphone of the Sound Level Meter. The sound pressure accuracy is 0.5 dB at 23 °C and 760 mmHg

(Figure 4-1). The sound frequency at 1,000 Hz allows calibration of sound level meters having A, B, or C weighting networks, since this weighting has the same response at 1,000 Hz. The case of the Instrument is constructed of aluminum and designed to minimize loss when coupling the transducer cavity to the Sound Level Meter microphone.

1.1.3 The 890 uses only one control, a three position slide switch (Figure 3-1). This switch provides quick selection of power OFF/ON and battery test functions. In the BATT TEST position, a red light-emitting-diode (LED) lights to indicate adequate battery voltage.

1.1.4 The use of advanced, solid-state electronics, a careful choice of components and a special sound transducer achieve a rugged, stable design with excellent reliability and immunity to normal temperature and humidity changes.

1.2 ACCESSORIES AND SUPPLIES

1.2.1 All supplies and accessories required for the operation of the 890 are furnished with each Instrument, and listed in the accompanying Table 1-2. Available replacement parts are listed in Table 7-1.

1.3 TECHNICAL DATA

1.3.1 Table 1-1 lists the technical data for the 890.

Table 1-1. Technical Data

1. Acoustic Output:		
	Frequency:	1000 Hz ±1%
	Sound Pressure Level:	114 dB (Reference: 0 dB = 20 $\mu N/m^2$)
2. Accuracy:		±0.5 dB at reference conditions
3. Distortion:		Less than 1%
4. Temperature Range:		
	0° to +50°C	Operating temperature
	—40° to +60°C	Storage temperature (batteries removed)

5. Output Temperature Coefficient:	Less than minus 0.05 dB/°C
6. Operating Relative Humidity:	0 to 90%
7. Power Requirements:	One 9-volt battery, NEDA 1604
8. Battery Life:	Approximately 35 hours for 2 hours per day operation. Nominal current drain: 11.5mA. Refer to appropriate manufacturer's data for temperature effects on battery life.
9. Reference Conditions:	23°C, 760 mm Hg and 30% to 60% relative humidity.

10. Mechanical Construction:	Aluminum case includes acoustic cavity and provides shielding. Electronic circuits are packaged on a single printed-circuit board.
11. Weight:	13.5 oz. (.35 kg)
12. Dimensions:	5¼" long, 2" diameter (131 mm long, 50 mm diameter)

Table 1-2. Items and Accessories Furnished With This Instrument

Quantity	Description	Part No.
1	Screwdriver	5-116470
1	9 volt battery, NEDA 1604*	
1	Operator's Manual	6-111073

* *Available from local retail stores (transistor radio type)*

Table 1-3. Available Accessories

Description	Cat. No.
Carrying Case, Package (Houses 890 Calibrator and 884 or 886 Sound Level Meters)	00217

SECTION II

INSTALLATION

2.1 GENERAL

2.1.1 This section contains information and instructions for the installation and shipping of the 890. Included are unpacking and inspection procedures, warranty, shipping, power source requirements, and installation.

2.2 UNPACKING AND INSPECTION

2.2.1 Examine the shipping carton for signs of damage prior to unpacking. If none exist then unpack and inspect the Instrument for possible damage in shipment. Check the electrical performance as soon as possible. If damage is noted, notify the carrier and supplier before using the Instrument. Also, check that all furnished items and accessories are included (Table 1-2).

2.3 SHIPPING

2.3.1 Pack the Instrument carefully and ship it prepaid to the proper destination. Insure the Instrument.

2.3.2 Save the shipping carton and packing materials for future storing or shipping of the Instrument.

2.4 WARRANTY

2.4.1 The Simpson Electric Company warranty policy is printed on the inside front cover of this manual. Read it carefully prior to requesting a warranty repair.

NOTE: For assistance of any kind, including help with the Instrument under warranty, contact the nearest Authorized Service Center for instructions (listed on the last pages of this manual). If it's necessary to contact the factory directly, give full details of the difficulty and include the Instrument model number, serial number (at the back of the Instrument) and date of purchase. Service data or shipping instructions will be mailed promptly. If an estimate of charges for non-warranty or other service work is required, a maximum charge estimate will be quoted. This charge will not be exceeded without prior approval.

2.5 POWER SOURCE REQUIREMENTS

2.5.1 The 890 is powered by one 9 volt battery (supplied). Refer to Table 1-1, items 7 and 8, for description and paragraph 6.2 for installation. (The battery is packaged separately.)

2.6 INSTALLATION

2.6.1 The Calibrator can be hand-carried and operated in any position. In actual use, both the Calibrator and the Sound Level Meter can be hand-held (Figure 4-2).

NOTE: The accuracy of calibration will be affected if the Calibrator is not mated properly to the Sound Level Meter. Refer to the Table 3-1, item 4.

2.7 DAILY CARE

a. Immediately clean from the Instrument, any spilled material and wipe dry. If spillage is corrosive, use a suitable cleaner to remove spillage and to neutralize corrosive action.

b. Whenever the Instrument is not in use, set the OFF/ON/BATT TEST switch to the OFF position.

c. Avoid prolonged exposure or usage in areas subject to temperature and humidity extremes, vibration, mechanical shock, dust, corrosive fumes, and strong electrical and electromagnetic interference.

d. Be sure the transducer cap is firmly in place.

2.7.1 Monthly Care: If Instrument has not been used for 30 days, check battery for leakage and replace if necessary.

2.7.2 Annual Care: It is recommended that the Instrument be returned to the nearest Authorized Service Center or the factory annually (sooner if required) for a complete overall check, adjustment and calibration.

2.7.3 Storage: When the Instrument is not in use, store it in a room free from temperature extremes, dust, corrosive fumes, mechanical vibration or shock. If storage time is expected to exceed 30 days, remove the battery.

SECTION III

CONTROLS, CONNECTORS AND INDICATORS

3.1 GENERAL

3.1.1 All controls, connectors, indicators, and other operational items are described in Table 3-1. Become familiar with each prior to operating the Instrument for the first time (Figure 3-1).

Table 3-1. Controls, Connectors, and Indicators

1. Battery Cap:	This is an aluminum cap which threads into one end of the Instrument housing. It provides easy access to the battery compartment and also holds the battery firmly in position (paragraph 6.2).
2. BATT TEST Indicator: (LED)	When the Function Switch is held in the BATT Test position, a small light-emitting-diode (LED) indicator will illumi-

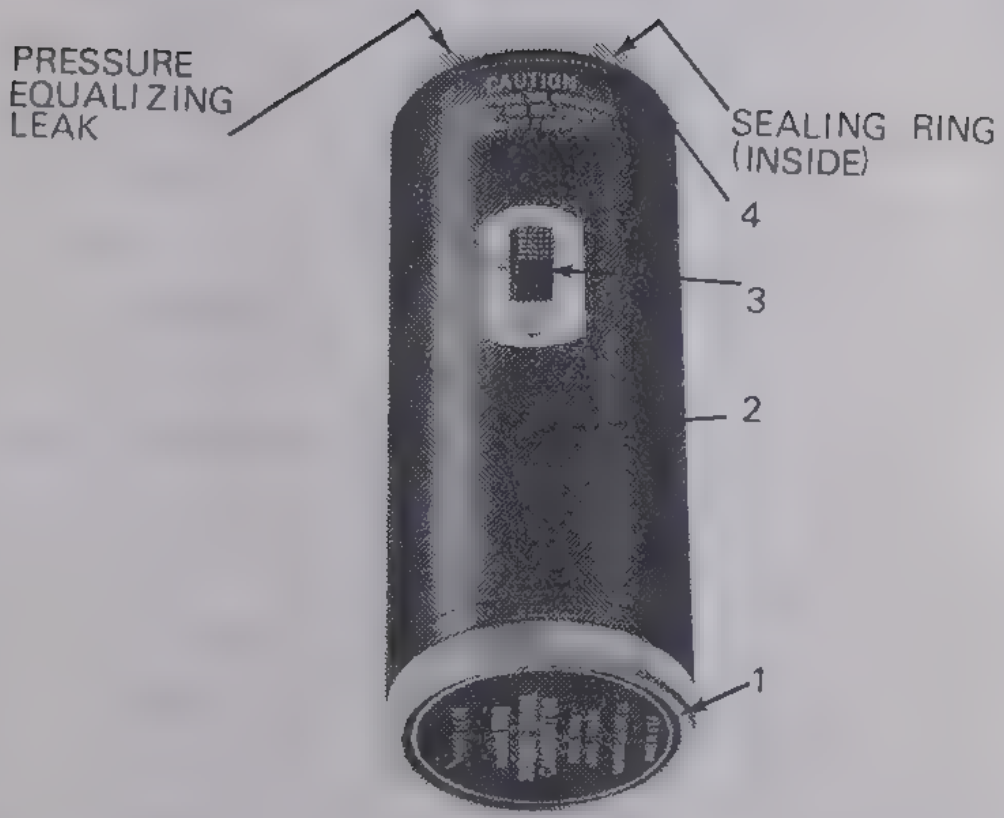

Figure 3-1. 890 Controls Description

nate if the battery condition is adequate to provide the specified sound pressure level of 114 dB.

3. **OFF/ON/BATT TEST:** This is a three-position slide switch. In the OFF position, the internal battery is disconnected from the electronic circuits. In the ON (center) position the battery power is applied to the electronic circuits. In the BATT TEST position, the battery is disconnected from the sound generating circuits and connected to a battery test circuit. The BATT TEST position is a momentary position; when released, the switch returns automatically to the ON position.

4. **Transducer Cap:** This is a precisely machined cap which threads into the other end of the housing. The mating of the transducer cap, and the

microphone of the Sound Level Meter being calibrated, constitutes an acoustic coupler. The cap includes a sealing ring to ensure a closed cavity between the cap and Sound Level Meter microphone, and a small hole on the side to provide a controlled leak to atmosphere.

SECTION IV

OPERATION

4.1 GENERAL

4.1.1 This section contains the instructions required for the operation of the 890. Follow these instructions and the Operator's Manual of the 884 and 886 Sound Level Meters, to ensure correct operation of the 890 and accurate calibration of the Sound Level Meter.

4.2 PRECAUTIONS

4.2.1 The 890 is intended for use in conjunction with the Simpson 884 and 886 Sound Level Meters. (Contact the factory for possible use with other sound level meters.)

4.2.2 When the 890 is turned on, a 1000 Hz tone is audible. At this point there may be a natural tendency for an operator to bring the Instrument against the ear.

WARNING

Never place the operating calibrator tightly against the ear. The high sound level present could be harmful, especially to someone with a hearing deficiency.

4.2.3 Carefully review and become thoroughly familiar with the contents of the Operator's Manual for the 884 or 886 Sound Level Meter (precautions, operating notes, specifications, etc.).

4.2.4 Check the calibration of the 890 periodically or whenever accuracy is doubted. For example, inspect the Instrument for evidence that might indicate that it has been subjected to severe mechanical shock or environmental extremes. This check can be made by comparison with another 890 Calibrator, or with a reference 884 Sound Level Meter known to be accurate. If another 890 or reference Sound Level Meter is not available, return the Instrument to an Authorized Service Center, or to the factory, for complete, overall check.

4.2.5 Be sure the sealing ring in the transducer cap is not damaged and that the leak-to-atmosphere hole is not clogged. (Refer to Table 3-1, item 4.)

4.3 EFFECTS OF ATMOSPHERIC PRESSURE AND TEMPERATURE

4.3.1 For any one location, the effects of normal variations of atmospheric pressure are usually negligible. The effect of elevation is shown in Figure

4-1. This graph shows the change in Instrument output level compared to that obtained at sea level. For example, if the Instrument is being used at 5000 feet, calibrate the Sound Level Meter for an indication of 113.75 dB.

4.3.2 The effects of temperature are less than —0.05 dB/°C (reference is 23°C).

4.4 PRELIMINARY CHECKS

a. Check battery condition by sliding and holding the OFF/ON/BATT TEST switch to the BATT TEST position. The LED will light, indicating that the battery is OK. If it does not light, replace the battery. Refer to paragraph 6.2.

   NOTE: An audible output might be obtained with a weak battery. However, any calibration made with the Calibrator will not be valid; therefore, replace the battery immediately.

b. Release the OFF/ON/BATT TEST switch. It will return automatically to the ON position. In a quiet environment, the 1000 Hz tone can be heard several feet away.

c. Slide the OFF/ON/BATT TEST switch to the OFF position.

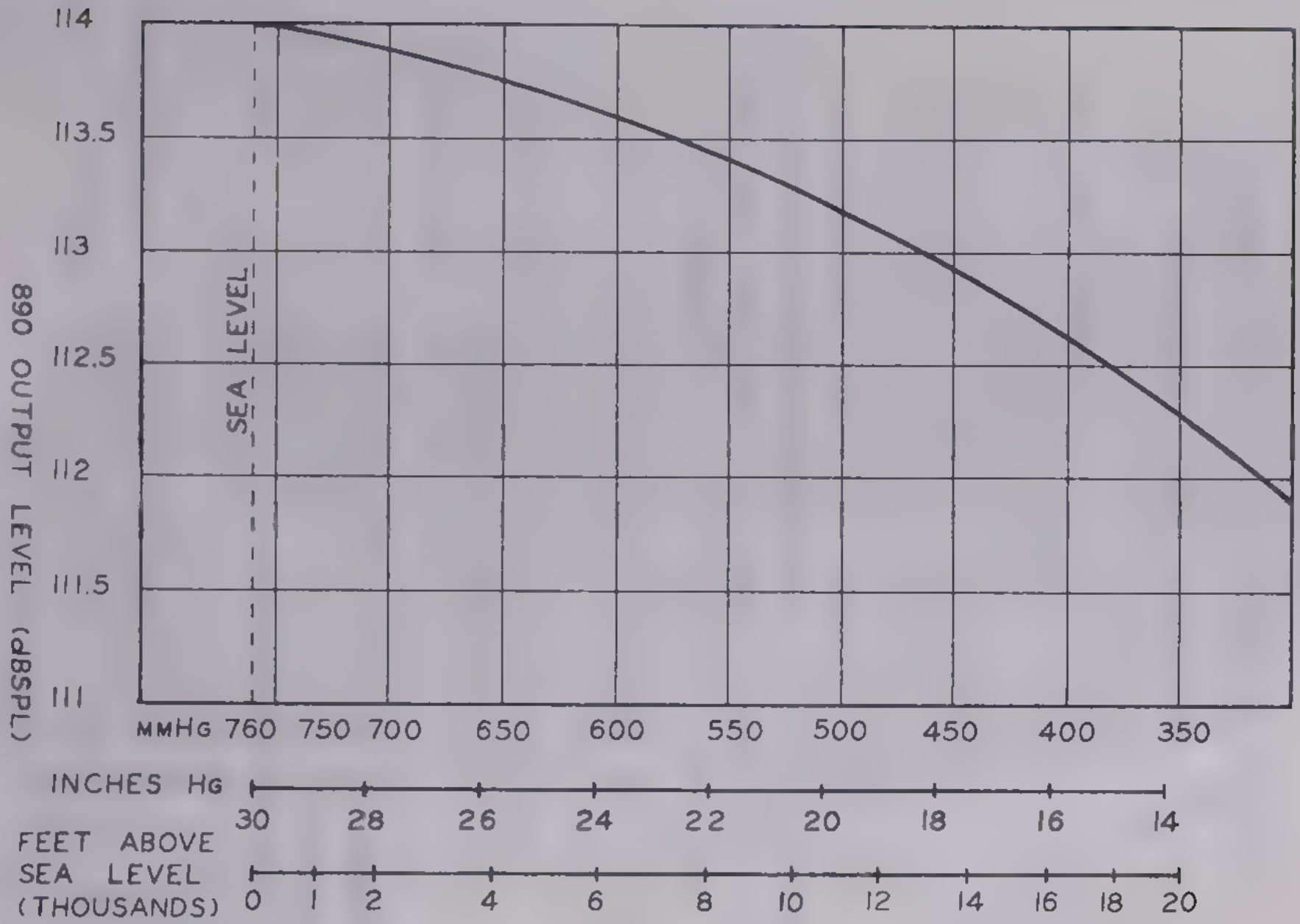

Figure 4-1. Effect of Elevation Upon Calibrator Output

4.5 SOUND LEVEL METER SETTINGS

a. Set the Range Switch to the 110-120 dB range.

b. Set the Response Switch to the Slow or Fast position (refer to Operator's Manual for the 884 Sound Level Meter, Table 3-1, item 2; or refer to Operator's Manual for the 886 Sound Level Meter, Table 3-1, item 3).

c. Set the A, B, or C weighting switches according to weighting specified for application intended. If weighting is not specified, use C weighting (not applicable for 884).

4.6 CALIBRATION OF 884 and 886 SOUND LEVEL METERS (Figure 4-2.)

NOTE: Calibrate the 884 and 886 Sound Level Meters in the same environment in which sound level measurements are to be taken.

a. Review paragraphs 4.2, 4.3, 4.4, and 4.5. Perform steps indicated and comply with all precautions.

b. Pull off the small metal cap covering the calibration adjustment of the Sound Level Meter.

c. Position the 890 over the microphone of the Sound Level Meter. (Note: If the Extension Cable accessory is to be used with the 886, calibration is performed with the Extension Cable connected between the microphone and the Sound Level Meter). Slowly push microphone as far as possible into cap (for accurate calibration, a closed cavity of fixed volume must be present between the transducer cap of the 890 and microphone).

d. With one hand, hold the 890 and the Sound Level Meter against the body and in the horizontal plane, as shown in Figure 4-2.

e. Slide the OFF/ON/BATT TEST switch of the 890 to the ON position.

f. Observe the meter indication on the Instrument. Its proper reading is 114 dB (if atmospheric and temperature effects are negligible). If it is not, the Sound Level Meter must be calibrated.

NOTE: The factors of atmospheric pressure and ambient temperature must be taken into consideration when observing the meter reading and

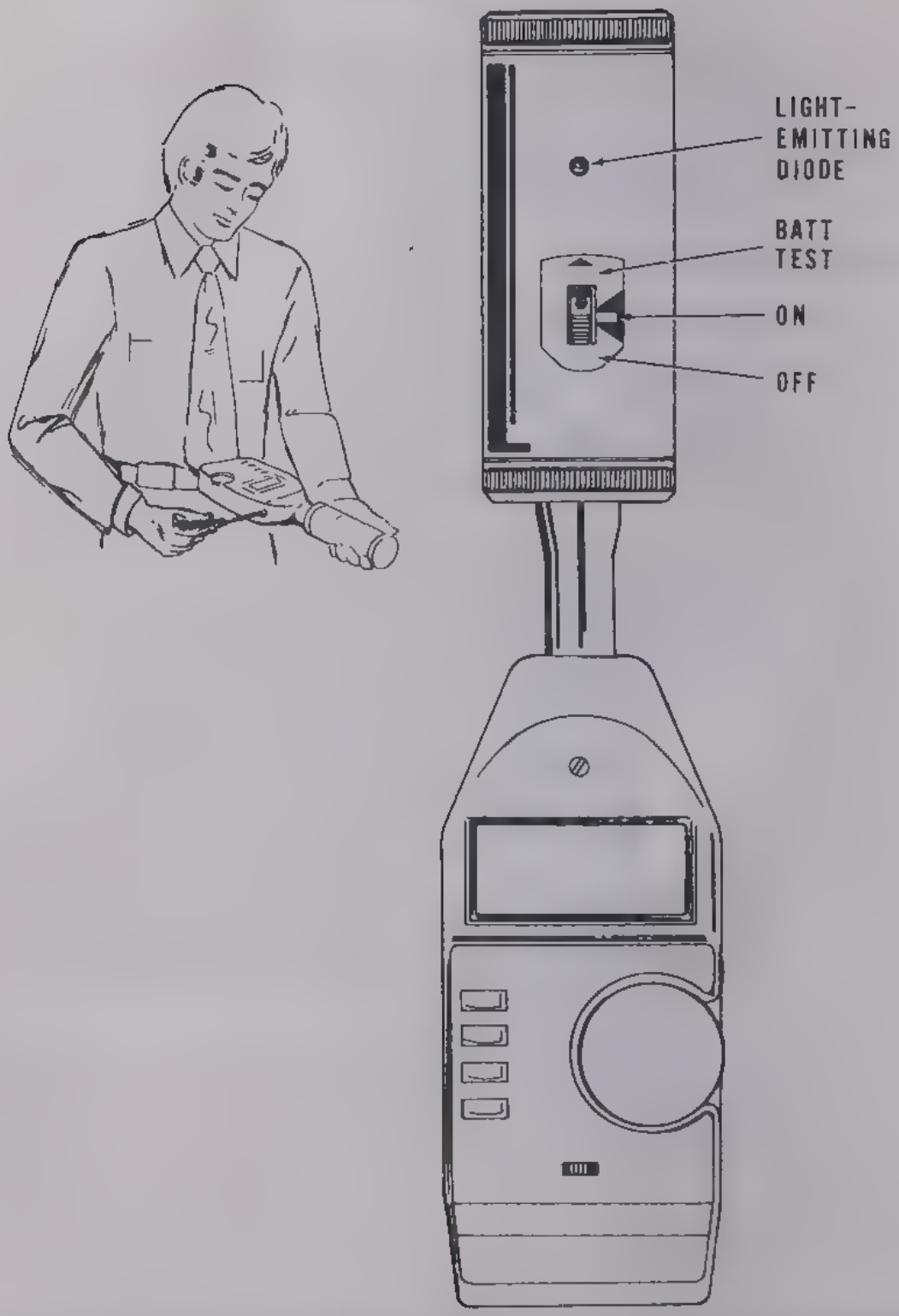

Figure 4-2. Position of the 890 and 884/886 for Calibration

prior to performing any adjustments (paragraph 4.3).

g. Using the small screwdriver supplied with the 890, rotate the CAL adjustment of the Sound Level Meter until the correct dB indication is obtained.

h. Slide the OFF/ON/BATT TEST switch of the 890 to the OFF position.

i. Rotate the Range Switch of the Sound Level Meter to the OFF position.

j. Replace the metal cap into the adjustment hole on the Sound Level Meter.

SECTION V

THEORY OF OPERATION

5.1 GENERAL

5.1.1 The overall schematic for the 890 Sound Level Calibrator is shown in Figure 7-1.

5.1.2 A 1000 Hz tone is generated by a "twin-T" oscillator formed by Q4, Q5, C2 through C5 and R8 through R15. This signal is then fed to an amplifier (Q6 and Q7) which drives the acoustic transducer. To keep the output level at a constant 114 dB as the 9 volt battery ages, a series-regulated power supply (Q3 and CR2) has been included.

5.1.3 When the OFF/ON/BATT TEST switch is in the BATT TEST position, Q1, Q2, and Q3 are connected as a battery test circuit and the light-emitting diode, CR1, lights if the battery voltage is OK.

SECTION VI

SERVICING INSTRUCTIONS

6.1 GENERAL

6.1.1 The 890 has been designed and constructed with high-quality components. By providing reasonable care and following the instructions in this manual, the user can expect a long, useful service life from his Instrument.

CAUTION

Do not permit other than Authorized Service Centers, or Simpson factory personnel, to disassemble any part of the Instrument other than the battery cap for battery replacement. Replacement of other components can necessitate recalibration, which requires special knowledge and facilities.

6.2 BATTERY REPLACEMENT

6.2.1 Turn the OFF/ON/BATT TEST switch to the OFF position.

6.2.2 Remove the battery cap (Table 3-1, item 1) by turning it counterclockwise.

6.2.3 Pull battery from the compartment and unsnap the connector. Note routing of the connector cable with respect to the battery and the indicating instrument.

6.2.4 Snap the battery connector onto the mating terminals of the replacement battery. The connector is polarized so it only can be connected one way.

6.2.5 Put the battery into the battery compartment. Turn the battery so the connector is facing outward. Coil the connector cable nearly on top of the connector so it will not interfere when the battery cap is replaced.

6.3 SERVICING AND CALIBRATING

6.3.1 Special training and facilities are required for servicing and calibrating sound level calibrators. Whenever the Instrument does not appear to be functioning properly, return it to the nearest Authorized Service Center, or to the factory.

SECTION VII

REPLACEMENT PARTS, SCHEMATIC DIAGRAM, AND AUTHORIZED SERVICE CENTERS

7.1 GENERAL

7.1.1 This section contains information for ordering replacement parts. Table 7-1 lists parts in alphanumeric order of their reference designators and indicates the description. (Refer to Table 1-2 for Items and Accessories Furnished With This Instrument.)

7.1.2 To obtain replacement parts, address order to the nearest Authorized Service Center (listed on the last pages of this manual). Refer to paragraph 2.4.1 for ordering instructions.

Table 7-1. Replacement Parts

Symbol	Description	Part No.
	Cap. battery compartment	5-116102
	Label, Identification Battery Compartment	5-117226
C1	Capacitor, 0.01μF$\pm$20%, 50V	5-113215

Replacement Parts

C2, C6	Capacitor, 2.2μF±10%, 16V	5-115533
C3, C5	Capacitor, 10,000pF±5%, 33V	5-116100
C4	Capacitor, 1800pF±1%, 500V	5-115174
C7	Capacitor, 0.68μF±20%, 35V	5-116099
CR1	Diode, Light Emitting, MV 10B	5-116101
CR2	Diode, Zener, 1N753A	5-112634
R1	Resistor, 560Ω±5%, 0.25W	5-116094
R2	Resistor, 1050Ω±1%, 0.25W	5-116156
R3	Resistor, 120Ω±1%, 0.25W	5-114951
R4, R9	Resistor, 4700Ω±5%, 0.25W	5-113629
R5	Resistor, 10kΩ±1%, 0.25W	5-114962
R6	Resistor, 1800Ω±1%, 0.25W	5-116096
R7	Resistor, 1000Ω±5%, 0.25W	5-113630
R8	Resistor, 680Ω±5%, 0.25W	5-116095
R10	Resistor, 330kΩ±5%, 0.25W	5-116098
R11	Resistor, 27Ω±5%, 0.25W	5-116089
R12, R15	Resistor, 120kΩ±1%, 0.25W	5-110263
R13	Resistor, 390Ω±5%, 0.25W	5-116092
R14	Resistor, Variable, 500Ω±10%	5-112707

Replacement Parts

R16	Resistor, 10kΩ±5%, 0.25W	5-116097
R17, R21	Resistor, 33kΩ±5%, 0.25W	5-116133
R18	Resistor, 470Ω±5%, 0.25W	5-116093
R19	Resistor, Variable, 1000Ω±10%	5-112708
R20	Thermistor, 1000Ω±10%	1-118947
R22	Resistor, 15kΩ±5%, 0.25W	5-116134
R23	Resistor, 330Ω±5%, 0.25W	5-116091
R24	Resistor, 180Ω±5%, 0.25W	5-116090
Q1	Transistor, PNP 2N4121	5-115939
Q2, Q4, Q5 Q6, Q7	Transistor, NPN 2N3565	5-114689
Q3	Transistor, NPN SE6002	5-114463

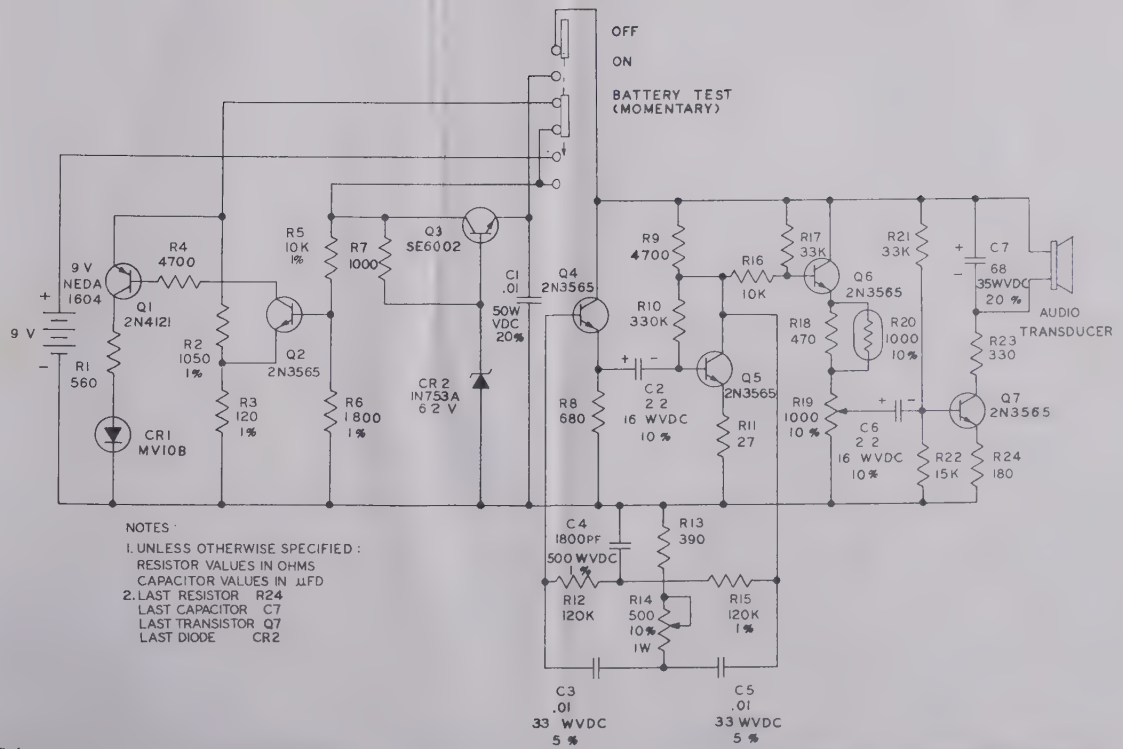

Figure 7-1. Schematic Diagram

AUTHORIZED SERVICE CENTERS

SIMPSON ELECTRIC COMPANY

853 Dundee Avenue, Elgin, Illinois 60120 — Phone: (312) 697-2260

★Parts Sales & Repair Service Only

★★Parts, General Test Equipment & Panel Instrument Sales & Service

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YUKON RADIO SUPPLY, INC
3222 Commercial Drive
P.O Box 406
Tel. 907/277-1497

★**ALASKA, ANCHORAGE 99500**
R. M. ZOOK & ASSOCIATES
1710 E. 27th Avenue
Tel. 907/272-6917

★**ALASKA, FAIRBANKS 99701**
YUKON RADIO SUPPLY, INC
1112 Cushman Street
Tel 907/452-1011

★★★**ARIZONA, PHOENIX 85040**
☐ METERMASTER INC.
4132 E. Wood St.
Tel. 602/243-4111

★★**CALIFORNIA, LOS ANGELES 90040**
☐ E.I.L. INSTRUMENTS INC
6212 Peachtree St.
Tel. 213/685-7020

★★★**CALIFORNIA, GLENDALE 91201**
☐ WEATHERFORD INSTRUMENT DIV.
WESTERN ELECTRONIC SUPPLY CORP
540 Allen Street
Tel. 213/246-4861

★★★**CALIFORNIA, LOS ANGELES 90040**
☐ METERMASTER, INC
5646 Jillson Street
Tel. 213/685-4340

★★★**CALIFORNIA, PALO ALTO 94303**
☐ METERMASTER, INC
3995 E. Bayshore Road
Tel 415/968-0313

★★★**CALIFORNIA, SAN DIEGO 92123**
☐ METERMASTER/SAN DIEGO
8799 Balboa Avenue
Tel 714/560-4841

★★★**CALIFORNIA, SAN FRANCISCO 94105**
PACIFIC ELECTRICAL
INSTRUMENT LAB
150 Folsom
Tel. 415/543-3104

★★★**CALIFORNIA, SANTA CLARA 95050**
☐ DYNAMETRON
2000 De La Cruz Blvd.
Tel. 408/246-6535

★**CALIFORNIA, SOUTH PASADENA 91030**
ETALON COMPANY
1323 Huntington Drive
Tel. 213/257-5410

★★★**COLORADO, DENVER 80223**
☐ METER MASTER INSTRUMENT
CORPORATION
1165 S. Cherokee
Tel. 303/722-5766

★★★**CONNECTICUT, MIDDLETOWN 06457**
☐ THE MANCIB COMPANY
Randolph Road and Coe
Tel. 203/346-6646

★★**FLORIDA, MIAMI 33136**
FLORIDA PRECISION INSTRUMENT
COMPANY
800 N.W. 7th Avenue
Tel. 305/324-1731

★★★**FLORIDA, MIAMI 33142**
☐ KIMBALL ELECTRONIC LAB., INC.
3620 N W. 48 Terrace
Tel. 305/635-9712

★★★**FLORIDA, ORLANDO 32805**
☐ BROWNELL-ELECTRO INC.
307 27th St., Box 8945
Tel. 305/843-6775

★★**FLORIDA, TAMPA 33614**
TAMPA INSTRUMENTATION CENTER
A.C. FERNANDEZ ELECTRIC
4807 N. Church Avenue
Tel. 813/870-0183

★★★**GEORGIA, ATLANTA 30354**
☐ BROWNELL-ELECTRO INC.
3020 Commerce Way
Tel. 404/762-5181

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EMC CORPORATION
2975 Ualena Street
Tel. 808/847-1138

★★**HAWAII, HONOLULU 96819**
KENS INCORPORATED
239 Puuhale Road
Tel. 808/847-1395

★★★**ILLINOIS, BRIDGEVIEW 60455**
E.I.L. INSTRUMENTS, INC.
9708 Industrial Drive
Tel. 312/430-2292

★★★**ILLINOIS, ELK GROVE VILLAGE 60007**
METERMASTER, INC.
121 Gordon Street
Tel. 312/593-8650

★★★**ILLINOIS, OAK PARK 60302**
PACIFIC INDICATOR COMPANY
6603 W. North Avenue
Tel. 312/261-1330

★★★**ILLINOIS, ROCKFORD 61108**
☐ ROCKFORD INSTRUMENTS LAB.
1718 Broadway
Tel. 815/397-1004

★★★**INDIANA, EVANSVILLE 47712**
☐ ELECTRO-LAB SERVICES INC.
510 Williams Road
Tel. 812/423-5211

★★**KANSAS, OVERLAND PARK 66206**
BROOKS ELECTRONICS INC.
3761 W. 95th Street
Tel. 913/648-3131

★★★**KANSAS, WICHITA 67211**
☐ MAIN ELECTRONICS INC.
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NOTES

CERTIFIED
INDUSTRIAL SOUND LEVEL METER SET IN ACCORDANCE WITH 42 CFR 82

Certificate No. TC-51-118

U.S. Department of Health, Education, and Welfare Center for Disease Control

NIOSH

National Institute for Occupational Safety and Health

Issued to Simpson Electric Company Elgin Illinois U.S.A.

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

The certified set consists of the following parts:

Description	Part No.
Simpson 886 Sound Level Meter	12620
Microphone	00183
Simpson 890 Sound Level Calibrator	12618
Windscreen (Optional)	00197
Microphone Extension Cable (Optional)	00198
Instruction Manuals	6-111071, 6-111073

LIMITATIONS

The Simpson 886 sound level meter is certified by NIOSH for occupational noise measurements only when calibrated according to the instruction manual on the day of use before and after a sound level measurement period by a Simpson 890 sound level calibrator. Certification of the sound level meter applies only to use of the A-weighting network and the slow response meter characteristic.

CERTIFIED
INDUSTRIAL SOUND LEVEL METER
SET IN ACCORDANCE
WITH 42 CFR 82

Certificate No. TC-51-117

U.S. Department of Health, Education, and Welfare Center for Disease Control

NIOSH

National Institute for Occupational Safety and Health

Issued to Simpson Electric Company Elgin Illinois U.S.A.

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

The certified set consists of the following parts

Description	Part No.
Simpson 884 Sound Level Meter	12619
Microphone	5-117166
Simpson 890 Sound Level Calibrator	12618
Windscreen (Optional)	00197
Instruction Manuals	6-111072, 6-111073

LIMITATIONS

The Simpson 884 sound level meter is certified by NIOSH for occupational noise measurement only when calibrated according to the instruction manual on the day of use before and after a sound level measurement period by a Simpson 890 sound level calibrator. Certification of the sound level meter applies only to use of the slow response meter characteristic.

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